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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,788	12/10/2003	Mehmet Yunt	MWS-106	8974
959	7590	05/26/2006	EXAMINER	
LAHIVE & COCKFIELD 28 STATE STREET BOSTON, MA 02109			SILVER, DAVID	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/733,788	Applicant(s) YUNT ET AL.	
	Examiner David Silver	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-47 are pending in Instant Application.

Information Disclosure Statement

2. No Information Disclosure Statements were provided by the Applicants.

Claim Objections

3. Claims 10, 19 and 43 are objected to because of the following informalities:

3.1 Claim 10: the word "claim" and the number "10" should be separated by a space.

3.2 Claims 19 and 43: the claims recite the word "at" twice ("at at").

Appropriate correction is required.

Examiner Notes

4. The Examiner respectfully requests that the section titled "Related Application" be amended to include the serial number of the pending application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 23, 32, and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 23 and 47 recites the limitation "said snapshots". There is insufficient antecedent basis for this limitation in the claims.

Claim 32 recites "initiation". There is insufficient antecedent basis for this limitation in the claim.

6. Claims not specifically mentioned are rejected by virtue of their dependency.
7. The Applicants are required to fix all other occurrences of similar deficiencies.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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8. Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 recites "In a modeling and execution environment, a method comprising". The statutory class is unknown, i.e. is it a process, or product. For the purpose of compact prosecution the statutory class will be interpreted as a process.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 5-9, 17-22, 24, 25-27, 29-33, and 41-46 are rejected under 35 U.S.C. 102(b) as being anticipated by MathWorks's Simulink, 1997 ("MathWorks", See PTO-892 for more information).

MPEP 2131.01 Multiple Reference 35 U.S.C. 102 Rejections recites:

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to: (A) Prove the primary reference contains an "enabled disclosure;" (B) Explain the meaning of a term used in the primary reference; or (C) Show that a characteristic not disclosed in the reference is inherent. See paragraphs I-III below for more explanation of each circumstance.

10. The above section of the MPEP relates to the use of the following references to show inherency within MathWorks:

10.1 "The Real-Time Workshop User's Guide." ("RTW"); and

10.2 "Target Language Compiler Reference Guide" ("TLC") (See PTO-892 for reference information).

As per claim 1, MathWorks discloses: In a modeling and execution environment, a method comprising the steps of:

providing a graphical debugger interfaced with a model view of a model being executed **(12-3)**,
said graphical debugger having debug information related to the execution of said model **(12-3)**,
said debug information indicating at least one of the order of the execution of a plurality of
methods in said model **(12-16, 12-16 to 12-19, 12-5)** and

a start time and a stop time of at least one method executed during the execution of said
model **(start time ... 12-3 last para; 2-12; stop time ... 4-2 "An important advantage is
that you can perform certain operations interactively while a simulation is running:**

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You can modify many simulation parameters, including the stop time, the solver, and the maximum step size.”); and

outputting said debug information to a user.

As per claim 2, Mathwork discloses: The method of claim 1, comprising the further steps of:

wrapping data generated by the execution of said model in an object, said wrapping

encapsulating said execution-generated data in said object **(11-3: How to Specify a Path for a Simulink Object, 9-4 "To File", 9-61, -144, -145); and**

exposing said data to said debugger via at least one interface to said object **(9-92 the exposure occurs when the debugger reads the information into the memory "From File", 9-61, -144, -145).**

As per claim 3, MathWorks discloses: The method of claim 2, comprising the further step of: altering said data via said interface **(-131, 4-2: "An important advantage is that...").**

As per claim 5, MathWorks discloses: The method of claim 1, comprising the further steps of:

processing said model to create compiled model information **(1-10 bullet 2, 1-12, 8-2: "C language S-functions are compiled as MEX-files using the mex utility described in the Application Program Interface Guide. As with other MEX-files, they are dynamically linked into MATLAB when needed.); and**

programmatically generating executable code from said compiled model information, said code including an interface to said debugger **(1-12: linked, 8-36 first 3 para, 8-42: cg_sfun.h is included if the file is being used in conjunction with the Simulink Real-Time Workshop to produce a stand-alone or real-time executable.).**

As per claim 6, MathWorks discloses: The method of claim 5, comprising the further step of:

executing said generated code wherein said debugger at least one of sends and receives

information from said executing code during said execution **(5-50 second para from bottom ...the debugger is in communication with the executable. "The Real-Time Workshop User's Guide." ("RTW") expands on this limitation MPEP 2131.01 allows for multiple**

reference to be used to show inherency. RTW expands on this limitation. See RTW 6-10 : "External Mode Communication External mode allows communication between the Simulink block diagram and the stand-alone program that is built from the generated code. In this mode, the real-time program functions as an interprocess communication server, responding to requests from Simulink. See Chapter 4, "External Mode, Data Logging, and Signal Monitoring," for information on external mode.").

As per claim 7, MathWorks discloses: The method of claim 6, comprising the further steps of:

saving the execution history of said executable code **(MathWorks' "Target Language Compiler Reference Guide" ("TLC") further expands on this inherent feature on page A-20 "This history is saved in the real-work vector."); and**

outputting the execution history by at least one of saving it in a permanent memory location **(this feature is inherent)**, displaying it for a user **(the GUI displays the results to the users, furthermore, the data stored to the files is viewable by users)**, and sending it to a printing device to be printed **(RTW: 4-9, MathWorks: 3-26).**

As per claim 8, MathWorks discloses: The method of claim 6 wherein said debugger is started after compilation and before the execution of said code **(this feature is inherent within the disclosure. Specifically, the debugger must have something to debug and therefore debugs after the compilation has finished. Furthermore, the debugger starts the execution of the code and is therefore started before the execution of the code.)**.

As per claim 9, MathWorks discloses: The method of claim 1, comprising the further step of:

indicating graphically with said debugger a plurality of blocks that are part of an algebraic loop when execution of the model is processing the algebraic loop **(7-10, 12-14, 12-18, 4-20 first para).**

As per claim 17, MathWorks discloses: The method of claim 1, comprising the further step of:

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communicating with an external mode simulation with said debugger **(8-114:**

"SS_SIMMODE_EXTERNAL — External mode simulation").

As per claim 18, MathWorks discloses: The method of claim I, comprising the further step of:

saving a snapshot of data relating to model execution during execution, said snapshot data being sufficient to enable the subsequent restarting of the execution of said model using said snapshot data at a saved point in time **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be useful when you want to save a steady-state solution and restart the simulation at that known state.").**

As per claim 19, MathWorks discloses: The method of claim 18 wherein said snapshot data is saved programmatically at at least one of a regular interval or based on a user-defined parameter **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be useful when you want to save a steady-state solution and restart the simulation at that known state." The user defined parameter is whenever the user chooses to do so manually.).**

As per claim 20, MathWorks discloses: The method of claim 19, comprising the further step of: loading a saved snapshot into said debugger; and
executing the saved model from the point in time said snapshot was saved **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be useful when you want to save a steady-state solution and restart the simulation at that known state.").**

As per claim 21, MathWorks discloses: The method of claim 18, comprising the further step of: displaying graphically to a user the saved snapshot data **(this feature is inherent when the snapshot is restarted).**

As per claim 22, MathWorks discloses: The method of claim 21, comprising the further step of
displaying graphically to a user at least one additional set of snapshot data without restarting the execution of said model **(This feature is inherent, it is the filename of the snapshot.).**

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As per claim 24, MathWorks discloses: The method of claim 18, comprising the further step of:

saving a difference between a set of current model execution data and a saved snapshot **(this feature is inherent. Specifically, when the simulation is restarted from a snapshot point and later saved it will be saved with the difference incorporated within the new snapshot.)**.

As per claim(s) 25-27, 29-33, 41-46, note the rejection of claim(s) 1-3, 5-9, 17-22, 24 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 4, 10-16, 23, 28, 34-40, 47 rejected under 35 U.S.C. 103(a) as being unpatentable over

MathWorks's Simulink, 1997 ("MathWorks") as applied to claim 1 above, and further in view of Fenlason's "GNU gprof" ("GNU gprof") (1998).

As per claim 4, MathWorks discloses all limitations of claim 1, and that the execution-generated data is at least one of state information **(4-16 "Loading and Saving States", -131, A-22: signal generators, etc, 8-65)**, block inputs, block outputs **(3-15, 8-46 "In general, block inputs and outputs are written", 9-80)**, solver data **(4-4, 4-6, 4-16)**, signal values for said model **(-119, 8-124)**.

MathWorks however does not explicitly disclose profiling data. GNU gprof however discloses an analogous application profiling system having the said feature **(page 14, "The primary line of this entry describes the total time spent directly in the functions of the cycle.")**. It would have

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been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 10, MathWorks discloses: The method of claim 1, comprising the further step of: saving a record of a unique method invocation, **(1-3: "After you define a model, you can simulate it, using a choice of integration methods, either from the Simulink menus or by entering commands in MATLAB's command window.")**. MathWorks however does not substantially disclose said unique method invocation being information related to the execution of a method that belongs to at least one of a block, system, and model instance in an execution list of called methods. GNU gprof however discloses an analogous application profiling system having the said feature **(page 11: Call Graph)**.

As per claim 11, MathWorks discloses all limitations of claim 10. MathWorks does not expressly disclose that the unique method invocation record includes information regarding child records of methods executed inside the unique method invocation record. GNU gprof however discloses the said features **(page 12 section titled "children")**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 12, MathWorks discloses all limitations of claim 11. MathWorks however does not expressly disclose that a link is provided from said unique method invocation record to said child record. GNU gprof however discloses an analogous system having the said feature **(page 6 section titled "--file-ordering map_file": "The '--file-ordering' option causes gprof to print a suggested .o link line ordering for the program based on profiling data.")**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

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As per claim 13, MathWorks discloses all limitations of claim 10. MathWorks does not however expressly disclose that the said unique method invocation record includes information regarding at least one parent record of methods in which the unique method invocation is executed. GNU gprof however discloses an analogous system having the said feature **(page 11: Call Graph)**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 14, MathWorks discloses all limitations of claim 13. MathWorks however does not expressly disclose a link is provided from said unique method invocation record to said parent record. GNU gprof however discloses an analogous system having the said feature **(page 6 section titled "--file-ordering map_file": "The '--file-ordering' option causes gprof to print a suggested .o link line ordering for the program, page 11: Call Graph)**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 15, MathWorks discloses all limitations of claim 10. MathWorks however does not expressly disclose that the said unique method invocation record includes data about a state of the method invocation. GNU gprof however discloses an analogous system having the said feature **(page 11: Call Graph - called column)**.

As per claim 16, MathWorks discloses all limitations of claim 15. MathWorks however does not expressly disclose that the said state indicates the method invocation is at one of the states of entering, entered, exiting and exited **(page 11: Call Graph)**.

As per claim 23, MathWorks discloses all limitations of claim 22. MathWorks however does not expressly disclose that the said snapshots are displayed in order of decreasing time. This is merely a design choice. Microsoft Windows allows for sort of descending or ascending names, file types, sizes, creation

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and modification dates. This is done for faster searching and identification of the user-required information.

As per claim(s) 28, 34-40, and 47, note the rejection of claim(s) 4, 10-16, and 23 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

Conclusion

12. All claims are rejected.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Silver
Patent Examiner
Art Unit 2128

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